



# Resource Management & Research Report

## Indiana State Parks & Reservoirs

No. 11-1

**Title:** 2010 State Park Deer Reduction Results

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**Abstract:** 2010 marked the 18<sup>th</sup> year since Indiana State Parks began deer reductions in an effort to mitigate damage to vegetation by an overpopulation of white-tailed deer (*Odocoileus virginianus*). Non-recreational deer reductions have continued annually since 1995 and have included up to 19 parks per year. The decision to initiate reductions at individual parks has been based on scientific vegetation monitoring. Decisions to continue reductions at individual parks are made annually using harvest data and consideration to elemental occurrence and status of rare, threatened, and endangered flora that could be affected by excessive browsing by deer. In 2010, 5,075 applicants were drawn to assist 16 parks and removed 1,689 deer. A trial standby drawing was moderately successful at Indiana Dunes State Park helping reduce the impact of originally drawn hunters not showing up or not returning on the second day of each hunt. Though the 2010 harvest was a four year high, data indicate a cumulative mean remaining just above targets for optimum habitat recovery.

### Introduction

White-tailed deer (*Odocoileus virginianus*) have thrived in Indiana State Parks since they were reintroduced to Indiana in the middle 20<sup>th</sup> century. Mild winters, absence of once present natural predators, and a decades-long lack of human hunting within protected state park boundaries resulted in excessive browsing by deer that compromised the overall composition, structure and function of most natural communities throughout the state park system. Browse lines and small, malnourished deer were a common sight at most state park properties by the late 1980's.

The first deer reduction hunt was held in 1993, with 466 hunters harvesting 392 deer. Since 1995, as many as 19 parks have held reduction hunts in the same year (Table 1). The decision to initiate reductions at any one park has been supported by data from monitoring particular herbaceous species at individual parks. Once parks begin reductions, harvest data are incorporated into annual decisions regarding habitat recovery and whether specific parks require a reduction the following year. Research indicates that vegetation and habitat begin to recover from over browsing once a firearm harvest per effort (H/E) nears 0.22-0.20 and/or a harvest per square mile (H/Mi<sup>2</sup>) is between 12 & 16 deer. Hunters are drawn for each park to fit a density of one hunter per 18-20 acres. Parks where archery is regularly used (Clifty Falls and Fort Harrison) due to urban interface have an H/E target of 0.10-0.08 and one hunter per 7-10 acres. Participants have been allowed to take up to three deer each (one of which could be antlered). These deer are in addition to regular statewide bag limits. Hunters who harvest receive "bonus" permanent tags from the park at no charge.

### 2010 Reduction Effort

Sixteen state parks required deer reductions in 2010. The first two-day hunt was held November 15 & 16 and the second was held November 29 & 30. A total of 1,689 deer were harvested with 5,057 hunter efforts and 5,075 applicants drawn for two, 2-day reductions. Though the 2010 harvest was 355 deer more than 2009, the total acreage of parks requiring reduction in 2010 was 18% more than the year before. Favorable weather also prevailed at a majority of parks during the first day of both hunts while rain and cool temperatures may have hampered the second day of both hunts. Mean no-show of drawn participants remains steady at 46%.

H/E data indicate relative stability from 2007 to 2009 with a slight increase in 2010. The cumulative mean H/E currently trends 0.20 above target levels (Figure 1). All parks participating with firearms in 2010 remain above the target H/E threshold after the 2010 reduction effort. Both archery parks remain above the 0.08 target.

A similar trend is demonstrated with H/Mi<sup>2</sup>. The cumulative mean H/Mi<sup>2</sup> currently trends 16.0 above target levels (Figure 2). All but two parks participating in 2010 remain above the target H/Mi<sup>2</sup> threshold after the 2010 effort.

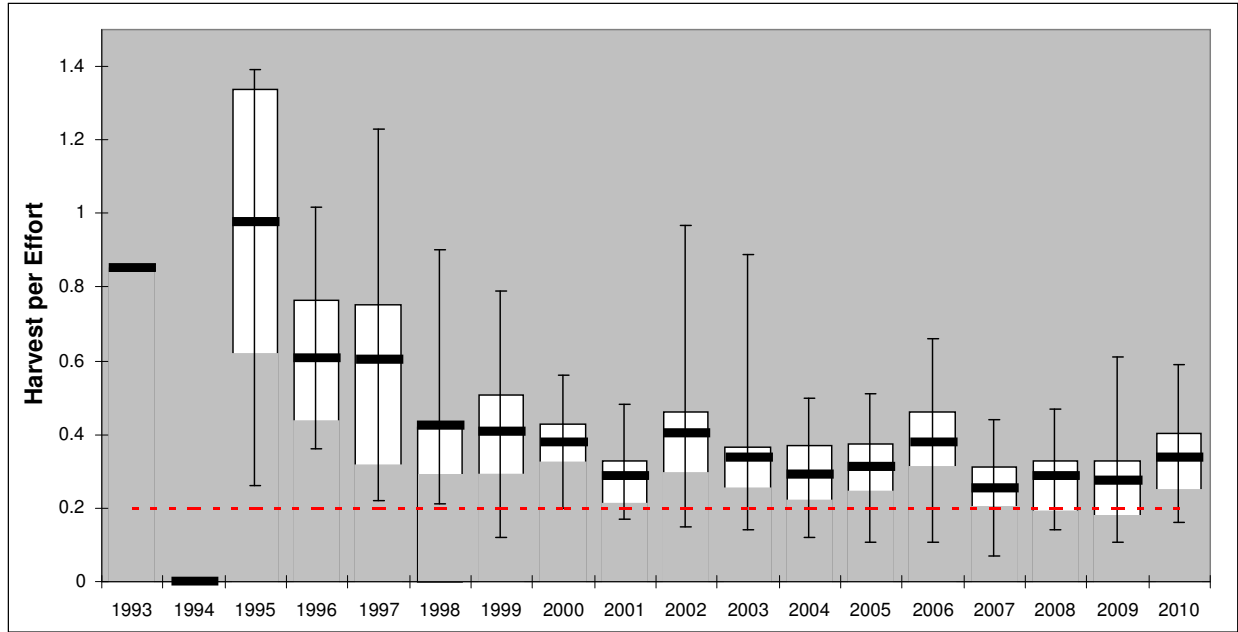
**Table 1. Number of State Parks and Deer Harvested 1993-2010**

Year	Number of Parks	Total Deer
1993	1	392
1994	0	0
1995	4	1,048
1996	7	2,027
1997	9	2,174
1998	10	1,735
1999	9	1,510
2000	14	1,655
2001	13	1,483
2002	13	1,522
2003	19	1,961
2004	15	1,253
2005	16	1,336
2006	16	2,017
2007	18	1,300
2008	17	1,468
2009	17	1,334
2010	16	1,689
<b>Total Deer:</b>		<b>25,904</b>

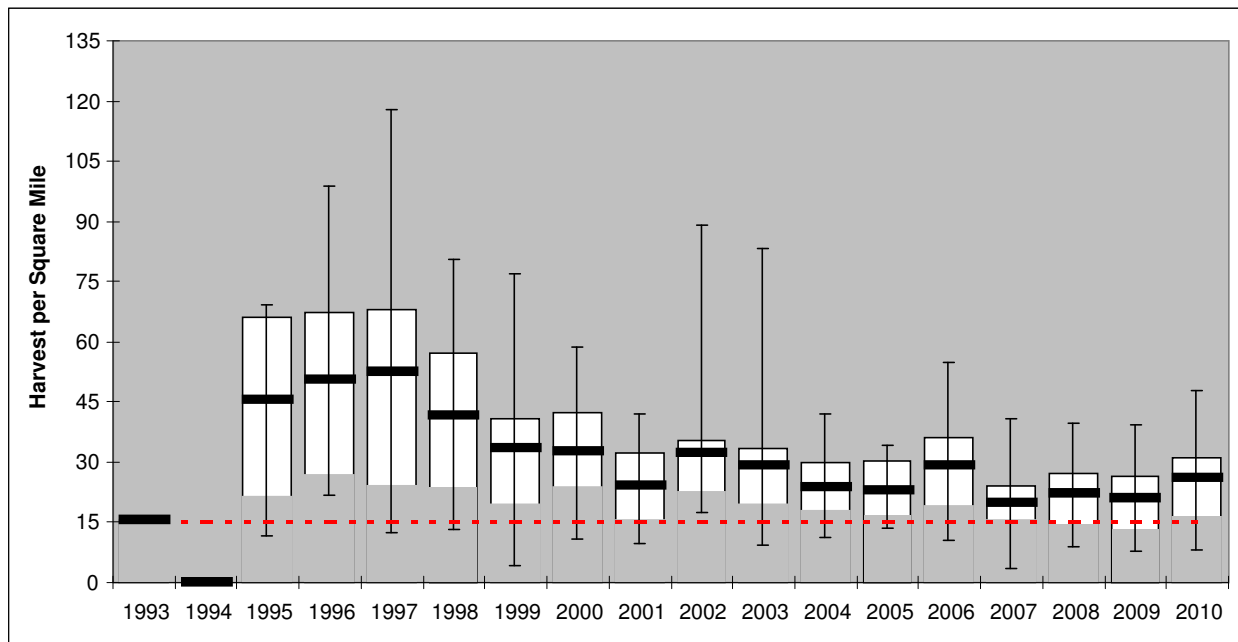


Percentage of adult bucks harvested has increased steadily since the reduction program began. However the 2010 harvest of adult bucks was down from 2009 and 2008. Only three parks harvested 40% or greater adult bucks in 2010 (Figure 3) compared to five in 2009.

## 2010 State Park Deer Reduction Results

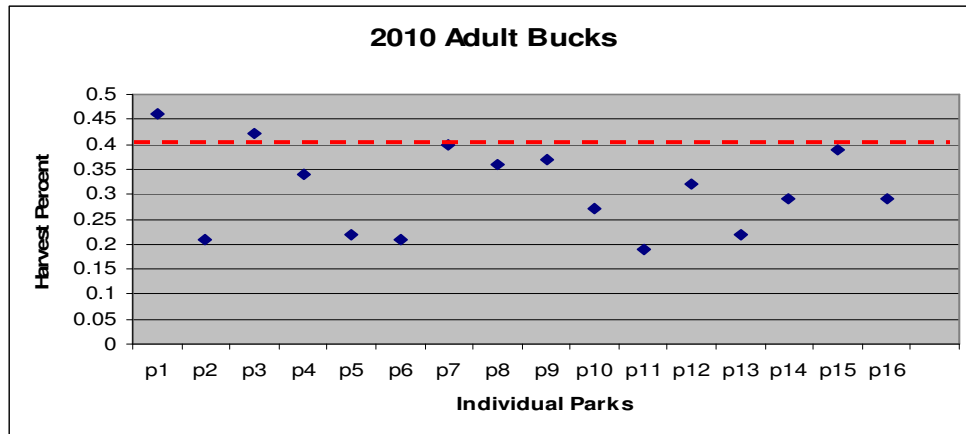


**Figure 1. 1993-2010 Harvest Per Effort.** The center black bar indicates the mean H/E for each year. The white box indicates the first quartile and third quartile. The whiskers represent the minimum and maximum H/E for each year. The red (hashed) line highlights the 0.20 target H/E level for firearms. Only one property (Brown County) was hunted in 1993, and no properties were hunted in 1994.



**Figure 2. 1993-2010 Harvest Per Square Mile.** The center black bar indicates the mean harvest per square mile for each year. The white box indicates the first quartile and third quartile. The whiskers represent the minimum and maximum harvest per square mile for each year. The red (hashed) line highlights the target of 15 harvest per square mile level for firearms. Only one property (Brown County) was hunted in 1993, and no properties were hunted in 1994.

## 2010 State Park Deer Reduction Results



**Figure 3. 2010 Percent Adult Bucks Harvested. Each label (p1 – p16) represents one of the 16 parks hunted in 2010.**

All harvested deer were weighed at two park properties in 2010. Table 2 displays the minimum, mean, and maximum weights for field dressed deer at each park.

### **Trial Standby Drawing**

A standby drawing was held at Indiana Dunes with the objective of filling spots left vacant by originally drawn hunters to increase pressure on deer. This drawing was the first of its kind for park reductions and was carried out with moderate success. Indiana Dunes was chosen because of elevated no-show rates upwards of 50% in recent years. The park is also laid out in such a way that facilitates an ample staging area for the drawing at the park entrance while providing staff ability to monitor and control potential standby hunters' entry into the park.

Participants in the standby drawing had to meet the same eligibility as those originally drawn (Indiana residents or in possession of a lifetime license for harvesting deer, 18 years of age by the date of the first hunt, and possession of a valid license to hunt deer in Indiana). The standby drawing reduced what would have been a 49% four day average rate of no-shows in 2010 to 34%. Given expected success rates on the first day of each hunt and other factors, parks generally target no-show rates between 25-30%.

## 2010 State Park Deer Reduction Results

**Table 2. Minimum, Mean, and Maximum Field Dressed Weight Expressed in Pounds of Individual Deer Harvested at Two State Parks in 2010**

	Park 1			Park 2			Combined Average		
	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.
Adult Male	102	137	179	101	128	198	102	133	189
Juvenile Male	66	70	74	42	69	81	54	70	78
Adult Female	90	107	136	70	108	143	80	108	140
Juvenile Female	55	58	65	33	64	81	44	61	73

### Summary

With the exception of an increasing harvest of adult bucks, statistics continue to illustrate success for the deer reduction program. Despite a minority of concerns from some adjacent landowners and wildlife watchers that parks may be over harvesting to a point of excluding deer, the data have and continue to indicate habitat recovery as well as sustained deer populations. It should be reiterated that park reductions are not intended to manage populations for optimal recreational hunting. The goal is to simply reduce the impact of browsing to a level more conducive to pre-settlement conditions in natural communities.

**Table 3. 2010 Parks Requiring Reduction and Harvest**

Park	Harvest
Brown CO.	193
Chain O'Lakes	192
Charlestown	138
Clifty Falls	35
Fort Harrison	58
IN Dunes	85
Lincoln	57
McCormick's	47
Pokagon	41
Potato Creek	195
Prophetstown	52
Shakamak	34
Summit Lake	41
Tippecanoe	183
Versailles	236
Whitewater	102
<b>Total:</b>	<b>1,689</b>

Gone are the abrupt browse lines and emaciated deer of the past but less obvious damage persists throughout the parks. In addition to competing with other fauna for limited resources, deer continue to impact rare, threatened, and endangered flora and the regeneration of valuable oak forests within park boundaries. The 2010 effort was a success in helping reduce and maintain browse effects. Cumulative 2010 harvest numbers are consistent with recent positive trends (Table 3).

The elevated harvest of 2010, along with the parks not requiring reduction in 2010 already set to return in 2011, will likely result in most parks needing reduction in 2011. Parks requiring reductions in 2011 will be listed and made available along with online applications for 2011 hunts in July 2011.